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ARIZONA STATE UNIVERSITY ■ COLLEGE OF BUSINESS
CENTER FOR BUSINESS RESEARCH

Ability to Pay is the Critical Question

Arizona Sales Taxes and Regressivity

Most economists would argue that "equitable" tax systems should be based on the "ability-to-pay principle." Some would argue that regressive taxes violate this principle since, by definition, tax burdens do not increase as fast as income. Hence the poor generally pay less tax than the rich, but their tax burden is a larger proportion of their income. The problem with this notion is that income does not always accurately reflect ability to pay.

A recent study, "Estimated Individual Tax Burdens," produced by the Arizona Tax Research Association (ATRA), finds that the tax rate paid by individuals with an average gross income of $12,500 is 1.7 times higher than that paid by people with an average gross income of $66,000. Relying on a definition of regressivity that compares tax burden with gross income, the ATRA study suggests that, like many types of consumption-based taxes, sales taxes in Arizona are regressive. This article reconsiders the question of regressivity by adding an additional source of sales tax revenue, and using a substitute for gross income designed to be more closely related to ability to pay. Findings suggest that the existing sales tax code is nearly proportional when ability to pay, rather than gross income, is used to compare relative sales tax burdens.

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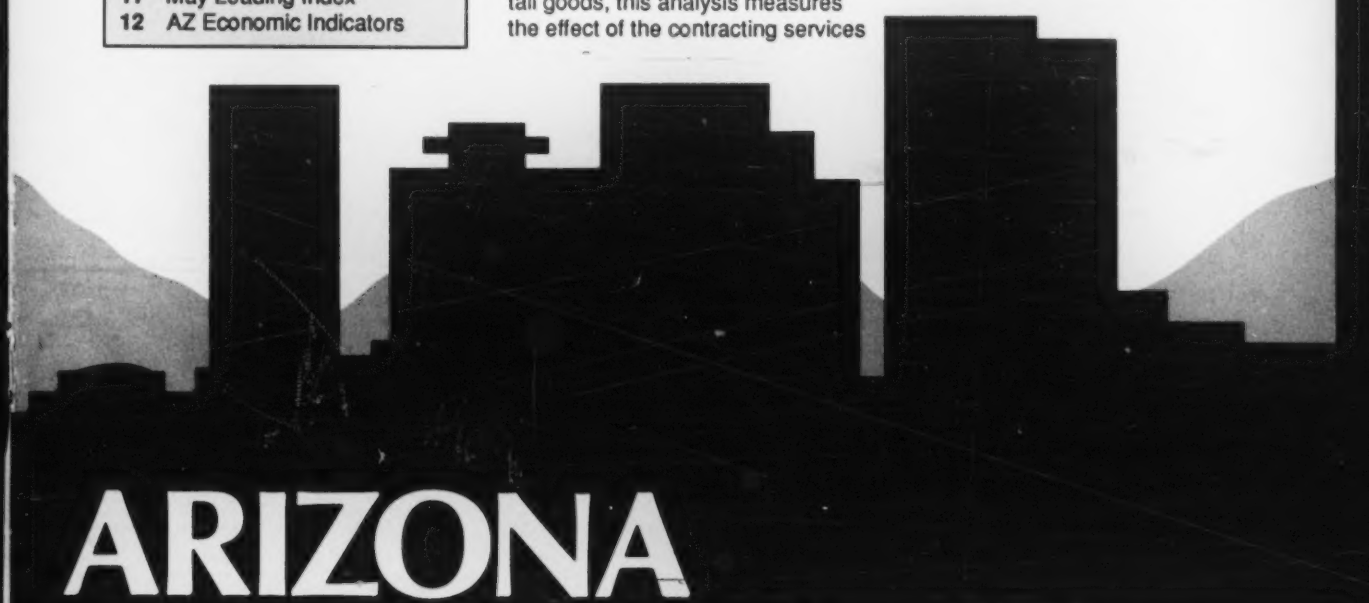
RESIDENTIAL CONSTRUCTION TAX

In addition to the sales tax on retail goods, this analysis measures the effect of the contracting services tax, which directly affects higher income homeowners more than lower income renters. While it is impossible to measure the incidence of 100 percent of the contracting tax, the taxes paid by the purchasers of newly constructed residential housing can be tracked with a reasonable degree of accuracy.

The "new residential housing" sales tax burden estimates are obtained by first tabulating the number and value of new home sales in 1986. (To be consistent with the latest Consumer Expenditures Survey results from the U.S. Department of Labor that are used throughout this analysis, data for 1986 were used). New home sales were apportioned to various income groups using survey data contained in the 1986 edition of *Inside Phoenix*. Sales activity in the Phoenix and Tucson metropolitan areas was separated from the limited number of sales that took place in other localities to capture



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price differentials that exist across the state. Also, not only do individuals in higher income groups buy proportionately more homes, they naturally buy homes at the higher end of the price distribution. A summary of these numbers by income distribution along with estimated sales tax burdens for the purchasers of new homes is shown in Table 1. The highest income earners pay considerably more than those in the low income categories.

The new residential housing analysis is combined with estimates of sales tax burdens in Table 2. The latter two columns contain the "residential construction tax" burden paid on an individual basis. This is obtained by first estimating the number of consumer units in each income category and dividing the total taxes paid in each group among *all* consumer units in each income category. Including the construction tax mitigates the estimate of regressivity somewhat so that the taxes paid by the $12,500 income group are 1.4 times higher than those paid by the highest income group rather than 1.7 times higher as observed by ATRA. However, considerable regressivity still is observed if gross income is used to compare relative sales tax burdens.

REGRESSIVITY AND THE ABILITY TO PAY

Gross income is not the best measure of an individual's ability to pay. An alternative is to consider the sales tax burden as a percent of *total* expenditures reported in the 1986 BLS consumer survey. Individuals who reported gross (before tax) incomes less than $10,000 (an average of $6,250) also reported expenditures that averaged well *over* $11,000 while average gross incomes of $12,500 supported *more than* $15,000 in expenditures – suggesting considerable wealth or credit availability in these income groups. (For example, some elderly receive little income, but have considerable savings.) Results suggest that despite observed gross income regressivity, individuals with high incomes are *not* able to tailor expenditures to avoid tax incidence.

TABLE 1
RESIDENTIAL CONSTRUCTION SALES TAX

Gross Income	Distribution of New Home Sales[1]	Total Expenditures on New Homes, In Millions[2]	Sales Taxes Assessed, In Millions[2]
Less than $10,000	0%	$ 0	$ 0
$10,000-14,999	4	54.3	2.0
$15,000-19,000	7	122.6	4.5
$20,000-29,999	18	409.0	14.8
$30,000-39,999	24	718.8	26.1
$40,000 or more	47	1,871.0	67.7

TABLE 2
SALES TAX REGRESSIVITY BASED ON GROSS INCOME

	Excluding Residential Construction[3]		Including Residential Construction[3]	
Gross Income[*]	*Sales Tax*	*Percent of Income*	*Sales Tax*	*Percent of Income*
$6,250	$380	6.1%	$380	6.1%
12,500	502	4.0	518	4.1
17,500	595	3.4	632	3.6
25,000	690	2.8	768	3.1
35,000	880	2.5	1,082	3.1
66,000	1,482	2.2	1,881	2.9

TABLE 3
SALES TAX REGRESSIVITY BASED ON ABILITY TO PAY

			Sales Tax as a Percent of Ability to Pay[4]	
Gross Income[*]	*Disposable Income*	*Expenditures*[4]	*Excluding Residential Construction*	*Including Residential Construction*
$6,250	$6,000	$11,426	3.3%	3.3%
12,500	11,845	15,084	3.3	3.4
17,500	16,290	18,266	3.3	3.5
25,000	23,834	23,008	3.0	3.2
35,000	31,309	28,043	2.8	3.5
66,000	53,853	43,996	2.8	3.5

TABLE 4
SALES TAX REGRESSIVITY, INCLUDING A TAX ON FOOD BASED ON ABILITY TO PAY

				Sales Tax as a Percent of Ability to Pay	
Gross Income[*]	*Estimated Food Expenses*[4]	*Food Sales Tax*	*Tax Less Credit*	*Excluding Construction*	*Including Construction*
$ 6,250	$1,600	$104	$ 0	3.3%	3.3%
12,500	1,930	125	0	3.3	3.4
17,500	2,072	135	0	3.3	3.5
25,000	2,284	148	100	3.3	3.6
35,000	2,736	178	178	3.4	4.0
66,000	3,397	221	221	3.2	3.9

[*]Average of income classes shown in Table 1.

[1] *Inside Phoenix 1986*, Phoenix Newspapers Inc.

[2]Arizona Real Estate Center, College of Business, Arizona State University

[3]Consumer unit distributions from Arizona Department of Revenue Tax Model, 1980 and summary population statistics, *1987 Arizona Statistical Review*, Valley National Bank.

[4]U.S. Department of Labor Consumer Expenditure Survey.

Source: Calculations by author.

From an entirely different perspective, most definitions of regressivity focus on tax burdens as a portion of disposable income. Disposable income is approximated by subtracting the ATRA estimates of Federal Income Tax burdens in Arizona from gross income.

Use of expenditures at the low income levels provides a better measure of ability-to-pay regressivity than either gross or disposable income because it is a better proxy for the sum of income and wealth. However, exclusive emphasis on expenditures at the higher income levels ignores the fact that the rich are able to avoid sales tax incidence by saving a portion of their income – thus they are really "able" to pay more. Hence, a more accurate definition of ability-to-pay regressivity can be obtained by using expenditures up to the point where income exceeds expenditures and using disposable income thereafter. Results that correspond to these definitions appear in Table 3. Slight ability-to-pay regressivity appears when the contracting tax is excluded but vanishes when the tax incidence of new residential contracting is also included.

REGRESSIVITY AND PROPOSED TAX CHANGES

The ATRA study examines whether several hypothetical changes in the existing sales tax code would lead to increased regressivity. Reinstitution of the sales tax on food at the state level is seen as a regressivity-inducing measure – resulting in a sales tax structure that leaves the relative tax burden on the poor some 1.9 (rather than 1.7) times greater than the burden borne by those in the highest gross income bracket. However, the ATRA study admittedly omits any low income credit from the analysis. Table 4 presents estimates of burdens that result from a reinstitution of the food tax *and* simultaneous low income credits to low income state residents. If 100 percent sales tax credits are provided to low income individuals, the food tax could be used to *actually mitigate* alleged regressivity in the existing sales tax structure. Such a system would be easy to institute and administer within the framework of the existing income tax structure.

A food tax, broad-based sales tax or a tax on business services makes especially good sense in a state like Arizona. These taxes provide the only mechanism whereby non-resident visitors can compensate the state for use of public services. The state of Florida has realized this potential revenue source and expanded its sales tax base accordingly. The sales tax allows states with a heavy influx of visitors to "export" its tax burden to non-residents who share in the benefits of state and local government expenditures. Any regressivities induced by increased sales taxes can easily be eliminated by providing for low income credits.

SUMMARY

A study recently produced by the Arizona Tax Research Association, which measures regressivity with respect to gross income, concludes that the sales tax structure in Arizona results in regressive tax burdens. However, use of gross income ignores wealth and the effect of other taxes (specifically the progressive federal income tax) and is not necessarily an accurate measure of the ability to pay. Indeed, after calculating the sales tax burden borne by the purchasers of new residential housing, total sales tax burdens as a proportion of the ability to pay are found to be virtually equal across all income levels.

The proposed food tax could actually be used to *mitigate alleged regressivity* if low income credits are instituted simultaneously. This proposal has the side benefit of exporting an additional portion of the sales tax burden to non-resident visitors to Arizona. It is also consistent with the sensible notion that heavily frequented tourist states such as Arizona and Florida should finance a substantial portion of their public expenditures by means of a broad-based sales tax. Sales taxes are the only direct conduit for non-resident visitors to compensate state and local governments for the public services they consume.

– Dennis Hoffman
Professor of Economics

Arizona Tax Capacity and Effort Near Average

The overall capacity to collect taxes in Arizona is nearly equal to the national average. The state's effort to match collections to capacity is only marginally below the national norm. These findings are derived from an analysis done each year by the Advisory Commission on Intergovernmental Relations (ACIR), a consortium of private citizens and public officials at local, state and federal levels.

State and local government revenues and expenditures were examined in the May issue of *Arizona Business*. This article extends the revenue analysis by taking into consideration the capacity to pay as well as a per capita comparison of collections. Changes to the tax structure are recommended in the conclusion.

PER CAPITA COLLECTIONS

Key revenue findings from the analysis in the May issue included the fact that Arizona's per capita revenues were well below the national average, but that tax collections were near the per capita norm, with the shortage being in federal intergovernmental revenues. Collections from specific taxes varied widely, with the general sales tax, selective sales tax on motor fuels, motor vehicle license tax and property tax being heavily exploited. In contrast, relatively little was collected from individual and corporate income taxes, other selective sales taxes, other license taxes and miscellaneous other sources.

TAX CAPACITY AND EFFORT

A more sophisticated analysis of tax capacity and tax effort yields somewhat different conclusions, however.

The ACIR defines tax capacity as the "dollar amount of revenue that each state would raise if it applied a nationally uniform set of tax rates to a common set of tax bases." For the general sales tax, for example, the tax base is the value of retail sales.

Tax effort is calculated by dividing the state's actual tax collections by its estimated tax capacity. It can be interpreted as "a measure of how much a state chooses to exploit all its potential tax bases relative to other states." A tax effort less than 100 indicates that more could be collected from that source before the tax burden would reach the national average.

The state's overall tax effort index was 97 in 1984-85, ranking 23rd (see Table 1). Approximately $160 million more taxes could have been collected before reaching the national average. The tax burden was particularly heavy on the general sales tax, in which tax revenue exceeded capacity by about $560 million; on the motor vehicle license tax ($43 million); and on the motor fuels sales tax ($23 million). The state's tax effort was particularly low on property taxes (capacity exceeded revenue by $480 million), the personal income tax ($210 million), and corporate license taxes ($36 million). A non-tax revenue source, user charges, could have been used to collect an additional $67 million before the revenue effort reached the national norm.

CONCLUSION

A comparative analysis of state tax systems suggests the following long-term changes in Arizona's tax structure:

- Raise more revenue from the personal income tax.
- Increase collections from the residential and non-residential property tax.
- Reduce the general sales tax rate on retail goods.
- Broaden the general sales tax to include food (with a rebate for low-income earners) and services. This extension of the tax would make it less cyclical, more progressive, and would spread the burden to non-residents.

Sources of smaller amounts of revenue that should be considered include raising selective sales taxes on alcohol and tobacco, creating a new tax on transfer of real estate, and increasing revenue from user charges and miscellaneous other sources, in part by "closing loopholes."

– Tom R. Rex
Research Manager

1987 TAX COLLECTIONS

State government tax collections in 1986-87 rose a little more than 8 percent both nationally and in Arizona, according to a just-released report by the U.S. Department of Commerce. Per capita collections in Arizona ($1,025) barely exceeded the national average ($1,018).

Collections from the general sales tax did not increase as much because consumer expenditures in Arizona have not been vigorous (see page 5). The tax rate on motor fuels increased January 1, 1987, resulting in a large increase in selective sales tax collections. Corporate income tax collections advanced strongly in 1986-87, but the state has reported much reduced flows in 1987-88. General property tax collections advanced, but total property tax revenues were unchanged because of a decline in special property tax receipts.

Though the effect was minor, collections in 1987 exaggerated the state's differences from national norms in sources of taxes.

TABLE 1
1985 ARIZONA TAX CAPACITY AND TAX EFFORT
Selected Revenue Sources

	Capacity Per Capita	Tax Capacity Index/Rank	Revenue Per Capita	Tax Effort Index/Rank	Tax Capacity	Tax Revenue
TOTAL TAXES	$1,393	99/21	$1,343	97/23	$4,439	$4,281
General Sales Taxes	336	95/27	511	152/ 3	1,069	1,628
Total Selective Sales Taxes	157	100/23	153	98/25	499	489
Motor Fuels	63	111/18	70	112/21	201	224
Insurance Premiums	19	99/22	17	93/32	60	55
Tobacco Products	16	88/43	16	95/30	52	50
Public Utilities	39	90/28	35	89/17	123	110
Alcoholic Beverages	16	115/13	12	75/29	51	38
All License Taxes	52	106/23	53	102/19	167	170
Corporations	12	108/18	1	9/36	39	3
Motor Vehicle Registrations	33	105/25	47	141/10	106	149
Personal Income Taxes	257	88/28	191	74/35	820	609
Corporation Income Taxes	60	76/46	63	105/14	192	202
Property Taxes	517	119/ 8	366	71/38	1,648	1,167
User Charges	288	92/29	267	93/38	918	851
TOTAL REVENUES	1,735	97/26	1,645	95/34	5,529	5,241

Source: Derived by the Center for Business Research, College of Business, Arizona State University from the Advisory Commission on Intergovernmental Relations, "Measuring State Fiscal Capacity, 1987 Edition."

Weak Retail Sales Contribute to State's Fiscal Problems

Retail sales growth in Arizona was unexpectedly weak in 1987 and improved only modestly in the first few months of 1988. Since the sales tax is such a large source of state government revenues, slow sales have contributed to the state's fiscal dilemma.

TABLE 1
1987 TAXABLE SALES
(In Thousands of Dollars)

	Retail	Share of State	Restaurant and Bar	Share of State
ARIZONA	$15,415,621	100.0%	$2,587,410	100.0%
Maricopa	10,097,890	65.5	1,644,978	63.6
Pima	2,735,613	17.7	479,360	18.5
Non-metropolitan	2,582,118	16.8	463,085	17.9

TABLE 2
1987 PERCENT CHANGE IN TAXABLE SALES ON AN INFLATION-ADJUSTED PER CAPITA BASIS

	Retail	Restaurant and Bar
ARIZONA	–2.8%	0.3%
Maricopa	–4.8	1.8
Pima	0.5	–6.7
Non-metro	1.9	2.7

TABLE 3
1987 TAXABLE SALES PER CAPITA

	Retail	Restaurant and Bar	Ratio
ARIZONA	$4,528	$760	6.0
Maricopa	5,126	835	6.1
Pima	4,306	755	5.7
Non-metro	3,230	579	5.6

Source (Tables 1, 2 and 3): Center for Business Research, College of Business, Arizona State University from Arizona Department of Revenue data.

1987 CALENDAR YEAR

In 1987, retail sales in Arizona exceeded $15.4 billion; restaurant and bar sales added nearly $2.6 billion more. Sales in the Phoenix area accounted for close to two-thirds of the total (see Table 1). Tucson area sales barely exceeded those of non-urban Arizona. Among the rural counties, Coconino registered the greatest sales in each category.

In 1987, retail sales increased 4.3 percent; restaurant and bar sales rose 7.6 percent. However, inflation – 4.1 percent in the Phoenix area – accounted for most of these gains. Further, the Arizona population increased 3.1 percent during 1987. Thus, real per capita sales barely rose during 1987 in the restaurant and bar category and actually declined in the retail classification (see Table 2).

Eight of the 15 counties experienced a decline in real per capita retail sales, including a large 4.8 percent decrease in the Phoenix area. In contrast to retail sales, Maricopa County registered a real per capita increase in restaurant and bar sales, but Pima County experienced a sharp decline, the worst in the state. This pattern of relative strength in one measure but weakness in the other prevailed in several rural counties as well, though overall, rural Arizona posted the greatest increase in both retail and restaurant and bar sales. The inconsistent growth between measures and among counties is not easily explained.

LONG-TERM PATTERNS

Large differences in sales per capita occur throughout the state. Both retail and restaurant and bar sales per capita are highest in Maricopa County and lowest in non-urban Arizona (see Table 3). Per capita sales are affected by numerous factors, including affluence of residents, commuting patterns to retail centers, cultural differences, tourism, and seasonal residents.

The ratio of retail sales to restaurant and bar sales does not vary that much between the two urban areas and non-urban Arizona as a whole, but does exhibit large differences by county. This ratio in part is a measure of tourism since restaurant and bar sales are much more affected by tourists than are retail sales.

Sales of both types are seasonal, but the pattern varies across Arizona. The high-elevation northern counties have peak sales in the summer and, except for December retail sales, have the lowest sales in the winter, corresponding to their tourist/seasonal resident season. The southern desert counties, including the two urban areas, have their peak season in the winter or spring, with lowest sales in the summer. Mid-elevation counties and those without a strong tourism component experience less seasonality in their sales.

RECENT TRENDS

The growth rate in both retail and restaurant and bar sales slowed during fall 1987 in several counties, including Maricopa. The weakening was most severe in restaurant and bar sales in the southern counties, most of which had been experiencing relatively rapid growth. Retail sales strengthened in February and March of 1988, but were very weak in April. Growth of restaurant and bar sales remained slightly negative on a real per capita basis.

During the first 11 months of the 1987-88 fiscal year used by state government, retail sales rose 4.8 percent and restaurant and bar sales advanced 6.3 percent. Inflation during the fiscal year was 3.9 percent and population gains were approximately 2.3 percent. Thus, even an extraordinarily good last month of the year would not have brought growth in retail sales to the breakeven point on a real per capita basis.

– **Tom R. Rex**
Research Manager

Population Projections Vary Widely

The U.S. Bureau of the Census recently released a new series of population projections for all states, derived from a sophisticated model that was three years in the making. This has prompted the Center for Business Research to update the comparison of population forecasts included in the July/August 1986 issue of *Arizona Business*.

During the last two years, projections have been created or updated by at least five organizations. Their outlook for Arizona varies considerably, as seen in Table 1. The Census Bureau's predicted population change and population in the year 2000 are somewhat lower than those of the CBR, whose most likely scenario (see the May 1988 issue of *Arizona Business*) falls nearly in the middle of the two extreme projections.

During the 13 years from 1987 to 2000, the anticipated average annual population change ranges from 143,000 by the Arizona Department of Economic Security (DES) to only 65,000 by the National Planning Association (NPA). Such divergent possible population flows have serious implications for both the public and private sectors.

The public sector is a heavy user of population estimates and projections. Numerous statutes, ordinances and the like require the use of population figures, for such purposes as disbursement of funds and planning long-term allocation of resources.

Projections of population growth also are widely used in the private sector for planning purposes. For example, real estate development, such as the planned communities that are increasingly numerous in the Phoenix area, is typically based in part on population projections.

TABLE 1
ARIZONA POPULATION ESTIMATES AND PROJECTIONS
(In Millions)

	1987 Estimate	*2000 Projection*	*Population Change*
Arizona Dept. of Economic Security	3.48	5.34	1.86
Center for Business Research–High	3.41	4.97	1.56
Center for Business Research–Most Likely	3.41	4.75	1.34
U.S. Bureau of the Census	3.39	4.62	1.23
Center for Business Research–Low	3.41	4.58	1.17
Woods & Poole Economics, Inc., Washington, D.C.	3.29	4.35	1.06
NPA Data Services, Washington, D.C.	3.37	4.22	0.85

Source: Organizations listed above.

ANALYSIS OF PROJECTIONS

U.S. Bureau of the Census

The Census Bureau's new model includes virtually all demographic data available on a state-specific basis, including fertility and mortality data, state-to-state migration flows, and international immigration and emigration.

The fundamental demographic trend underlying these predictions is that the U.S. population as a whole is becoming older – more middle-aged and elderly with fewer young individuals. As a result, mortality will increase, births will decrease, and interstate migration will slow. Otherwise, continuation of existing trends is largely assumed.

In the North, the Great Lakes region is predicted to lose population through the rest of this century while growth in the Plains states is expected to remain slow. In contrast, population growth is stronger during the 1980s than in the 1970s along the East Coast. The Northeast is forecast to continue growing faster in the 1990s, contrary to the national trend toward slower growth that is foreseen for all other regions.

In the rapidly growing southern part of the country, growth is expected to slow only marginally in the South Atlantic region in the 1990s. In contrast, growth in Texas and surrounding states peaked in the early 1980s, slowing sharply by the mid-1980s. This region is not likely to grow as fast in the 1990s as from the early 1970s to early 1980s.

Growth in the Mountain states has slowed; the Census Bureau predicts further slowing equal to the national pace. The Pacific region experienced much faster growth in the 1980s than in the 1970s, though this was limited almost entirely to California. As in the Mountain states, growth is anticipated to slow during the rest of the century.

Thus, despite less interstate movement, the Sunbelt population will continue to grow and considerable net out-migration from northern states will persist. According to the Census Bureau projections, Arizona will be the fastest growing state on a percentage basis (35 percent between 1987 and 2000).

NPA Data Services, Washington, D.C.

Though national population growth is expected by NPA to slow at about the same rate as predicted by the Census Bureau, the regional distribution of population is considerably different, both in the 1987 estimates and in the projections. NPA projects much less regional migration in coming years than experienced during the 1970s and 1980s – a sharp break from established patterns. NPA also assumes much less migration from North and East to the Sunbelt, with differences particularly apparent in the Midwest (see Figure I).

Woods & Poole Economics, Inc., Washington, D.C.

The basic forecast made by Woods & Poole (W&P) – an economic consulting firm – differs from the others in that it assumes faster, rather than slower, national population growth during the rest of the

century, compared to the 1970-87 period. The regional distribution of population growth predicted by Woods & Poole is similar to that of NPA, except that W&P anticipates somewhat faster growth in the Pacific region, offset by slower growth in the Mountain region. Arizona is among just a few states anticipated to grow more slowly than in the Census Bureau projections.

Other National Groups

Another set of population figures available for limited periods (year-end 1986 and year-end 1991) are produced by *Sales and Marketing Management* (SMM) magazine. Both their 1986 estimate and 1991 projection are slightly lower than CBR figures.

Forecasts made by the U.S. Bureau of Economic Analysis in 1985 have not been updated. Their anticipated state population in the year 2000 was 4.40 million, less than the predictions of the CBR or Census Bureau.

Center for Business Research

The CBR's most likely scenario shows faster growth than predicted by any agency shown in Table 1 other than DES. It foresees average annual population growth of 103,000 between 1987 and 2000, slightly more than during the 1970s or 1980s, but 40,000 per year less than in the DES series.

The difference between the CBR and Census Bureau projections gradually widens over time. The CBR looks for average population gains to become slightly greater in the 1990s while the Census Bureau expects the growth to gradually decelerate.

Department of Economic Security

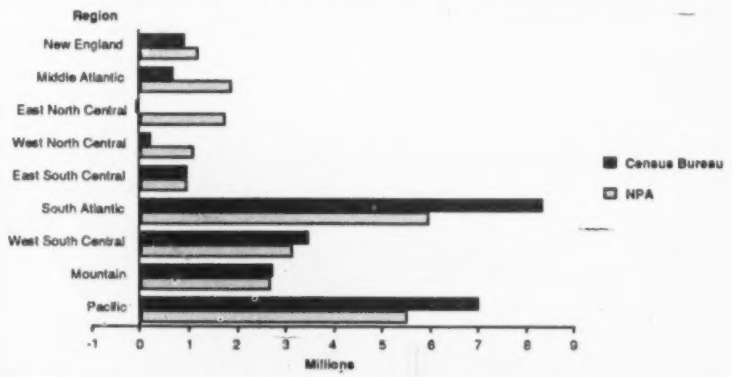
In late 1986, the state's "official" projections produced by DES were elevated by some 400,000 people in the year 2000. As discussed in the May 1988 issue, little rationale has been provided for the sharp revision, for predicted growth much higher than previously experienced, or for forecasts much higher than those of the other organizations reviewed in this article.

Another perspective on the DES numbers can be obtained by comparing projections produced in each state to forecasts by other organizations, such as the Census Bureau. In many states, the locally produced projections are similar to those of other agencies, but when a difference occurs, the local numbers usually are higher. The DES projection for the year 2000, however, is furthest off the Census Bureau prediction of the 40 states with updated outlooks. The 717,000 person difference exceeds that of states several times the size of Arizona. The 16 percent difference is third, behind the smaller states of North Dakota and West Virginia.

Moreover, the Census Bureau projections already assume that the Arizona population will grow faster than that of any other state, that net out-migration will occur from many northern states, and that growth in other Sunbelt states also will slow. Given these conditions, it is difficult to perceive how Arizona will receive an additional 717,000 net migrants in 13 years, as anticipated by DES.

The state's "official" projections may change later this year, however. The Department of Economic Security currently is working on a new set of numbers, generated by a new forecasting model.

FIGURE I
PREDICTED POPULATION CHANGE, 1987-2000



Source: U.S. Bureau of the Census and NPA Data Services, Inc.

COUNTY PROJECTIONS

County population projections are not available from the Census Bureau, but have been prepared by DES, NPA, SMM and W&P. Nearly all of the difference between CBR and SMM predictions for 1991 occur in Pima County, where the CBR assumes a modest undercount in the 1985 Special Census. Comparing the CBR and NPA forecasts for the year 2000, the CBR figures are higher in nearly all counties, with the proportionate difference greatest in Maricopa County. Compared to DES, the CBR projections are lower in all counties, but the proportionate difference is greatest in the metropolitan counties.

CONCLUSION

Anyone concerned with Arizona's growth should be aware of the wide range of population projections available. The state's "official" projections, which assume sharp increases in growth, are much higher than other series. In contrast, respected national groups expect considerably lower population growth in Arizona than the average of the 1970s and 1980s.

The CBR projections are equidistant from the two extremes, yet are higher than the Census Bureau predictions. Given the sophistication of the Census Bureau model, the CBR's "low" series must be given serious consideration.

– **Tom R. Rex**
Research Manager

Valley Inflation Rate Slightly Higher in Second Quarter

Inflation in the Phoenix metropolitan area accelerated modestly during second quarter 1988. The seasonally adjusted 1.3 percent increase exceeded the rates of the prior four quarters (see Table 1). Before seasonal adjustment, the Metropolitan Phoenix Consumer Price Index jumped 2.1 percent to 119.9 (1982-84=100), 3.8 percent higher than in second quarter 1987.

The uptick in the inflation rate was expected (see the CPI report in the May issue). Further, seasonally adjusted quarterly rates during the second half of 1988 should approximate that of the second quarter.

COMPONENT INDEXES

Price surges in a few subcategories accounted for most of the overall acceleration in the inflation rate. Most significant were increases in airline fares, prices of fresh fruits, electricity rates, and charges for professional medical services.

Food and Beverages

Food at home prices rose more rapidly in the second quarter than in nearly two years, but not much more than in the first quarter. The higher rate resulted mostly from a huge 37 percent climb in fresh fruit prices, putting them 50 percent higher than in second quarter 1987. Prices of meats, poultry, fish and eggs rose nearly 4 percent, but the dairy products index did not change and prices of cereal and bakery products and other foods at home declined (see Table 2).

Price changes during the second quarter were unrelated to the drought in the nation's farm belt. Somewhat higher food price inflation in the Phoenix area should result from the drought, but probably will not become noticeable until the winter.

Food away from home prices advanced the most since seasonal adjustment began in 1984. The 2.2 percent gain, however, followed a 1.3 percent decline in the first quarter.

Housing

Housing costs barely went up, with declines in shelter costs and prices of household furnishings and operations nearly offsetting a large increase in fuel and other utility rates. High vacancy rates and slow population growth caused both renters' costs and homeowners' costs to dip during the second quarter.

Electricity rates were boosted 4 percent, the most in two years. Other utility costs jumped nearly 7 percent, a result of large advances in the water and sewerage and cable TV subcategories.

TABLE 1
PERCENT CHANGES IN
METROPOLITAN PHOENIX CONSUMER PRICE INDEX

		Seasonally Adjusted from Preceding Quarter					
Expenditure Category	*Relative Importance*	*1st 1987*	*2nd 1987*	*3rd 1987*	*4th 1987*	*1st 1988*	*2nd 1988*
ALL ITEMS	100.0	2.1	1.1	0.7	0.9	0.8	1.3
Food and Beverages	16.4	–0.2	0.5	0.9	0.6	0.9	2.0
Housing	42.4	0.5	0.2	0.5	2.3	1.0	0.2
Apparel and Upkeep	5.8	–2.5	2.8	2.7	0.9	2.3	2.9
Transportation	19.1	8.1	3.0	0.9	-2.0	–0.5	2.4
Medical Care	6.7	1.8	2.7	–2.1	0.9	0.3	3.3
Entertainment	4.6	2.4	–1.2	2.0	3.1	1.2	0.1
Other Goods and Services	5.0	2.0	0.3	2.9	0.6	2.2	0.9

TABLE 2
METROPOLITAN PHOENIX CONSUMER PRICE INDEX
Second Quarter 1988

	Index (1982-84 = 100)		Percent Change from	
Expenditure Category	*Last Quarter*	*This Quarter*	*Last Quarter**	*Year-Ago Quarter*
ALL ITEMS	117.4	119.9	1.3	3.8
Food and Beverages	116.6	119.3	2.0	4.2
Food	115.5	118.2	2.1	3.6
Food at Home	117.4	119.7	2.1	4.7
Cereal and Bakery Products	132.5	131.3	–0.7	5.9
Meats, Poultry, Fish, and Eggs	108.9	111.5	3.8	4.8
Dairy Products	113.1	113.1	0.1	2.6
Fruits and Vegetables	126.9	146.3	10.2	20.6
Other Food at Home	115.2	112.4	–2.2	–2.9
Food Away from Home	114.0	116.7	2.2	2.9
Housing	113.8	115.5	0.2	4.2
Shelter	115.8	115.0	–0.7	3.0
Renters' Costs**	119.6	119.1	–0.3	2.0
Homeowners' Costs**	118.0	117.2	–0.7	3.1
Fuel and Other Utilities	108.0	120.5	4.2	9.0
Gas (piped) and Electricity	100.8	116.1	2.6	6.9
Household Furnishings/Operations	113.0	113.0	–0.7	3.6
Apparel and Upkeep	114.7	119.8	2.9	8.0
Transportation	113.7	117.1	2.4	1.1
Private Transportation	114.4	116.5	1.3	0.1
New and Used Cars	127.6	128.6	0.8	3.6
Motor Fuels	73.7	76.4	–1.7	–11.7
Public Transportation	106.3	116.2	9.1	8.1
Medical Care	142.2	146.0	3.3	2.4
Entertainment	138.9	138.6	0.1	9.1
Other Goods and Services	130.7	132.1	0.9	6.9

*Seasonally adjusted
**Base period is second quarter 1983.

Source (Tables 1 and 2): Metropolitan Phoenix data compiled by the Center for Business Research, College of Business, Arizona State University, in co-sponsorship with Valley National Bank.

Transportation

Second quarter inflation rates in the transportation category ranged widely. Prices soared for public transportation, automobile maintenance and repair, and vehicle rental and related items. Gasoline prices went down slightly; they were 12 percent lower than they were one year earlier. Small gains were measured in new car prices and auto finance charges.

Medical Care

Health care costs rose to the highest level since first quarter 1984, following three quarters of net decline. The hospital and related services index made its greatest jump in more than four years; it was 15 percent higher than in second quarter 1987. After modest gains in the preceding four quarters, fees for physician services surged, leading the increase in the professional medical services category.

Other Categories

Though entertainment costs barely changed in the second quarter, they still were 9 percent higher than in second quarter 1987. The entertainment services subcategory soared 20 percent in the last four quarters.

Apparel prices continued to rise in the second quarter; advances in excess of 2 percent were recorded in four of the last five quarters. The increase in the other goods and services category was less than 1 percent.

TABLE 3
METROPOLITAN PHOENIX AND UNITED STATES
CONSUMER PRICE INDEXES
Second Quarter 1988

	Percent Change from Last Quarter*		Percent Change from One Year Ago	
Expenditure Category	*Phoenix*	*United States*	*Phoenix*	*United States*
ALL ITEMS	2.1	1.3	3.8	3.9
Food and Beverages	2.3	1.1	4.2	3.4
Housing	1.5	0.9	4.2	3.6
Apparel and Upkeep	4.3	5.5	8.0	4.7
Transportation	3.0	1.2	1.1	3.2
Medical Care	2.7	1.5	2.4	6.4
Entertainment	–0.2	1.2	9.1	4.3
Other Goods and Services	1.1	0.7	6.9	6.5

*Not seasonally adjusted

Source: Metropolitan Phoenix data compiled by the Center for Business Research, College of Business, Arizona State University, in co-sponsorship with Valley National Bank; other data are from the U.S. Department of Labor, Bureau of Labor Statistics.

COMPARISON AREAS

Before seasonal adjustment, second quarter inflation in the Phoenix area was greater than the national average (see Table 3). Higher inflation was measured in each of the major categories except entertainment and apparel and upkeep.

Inflation during the year ending second quarter 1988 was nearly equivalent in the Phoenix area to the national average, continuing the relationship of the last three years. Higher Phoenix area inflation in entertainment and apparel was offset by lower inflation in transportation and medical care.

OUTLOOK

The forecast of inflation remains much the same as discussed one quarter ago. Seasonally adjusted gains of about 1.3 percent per quarter should continue, pushing the annual rate only slightly higher than 4 percent by year end. The drought may cause a slight acceleration in the 1989 inflation rate.

– Tom R. Rex
Research Manager

Education Spending Higher Than Reported

In contrast to reports from the National Education Association that place Arizona in the bottom ten states in expenditures per pupil, information from the just-released U.S. Bureau of the Census report, "Finances of Public School Systems in 1985-86," reveals that per pupil expenditures for elementary and secondary education totaled $3,816 in Arizona, 4 percent more than the national average of $3,678. Arizona ranked 19th of the 50 states and the District of Columbia. The NEA study is based on their own estimated expenditures for Arizona; the state has not supplied actual expenditure data to NEA for several years.

Arizona spends substantially more of its funds on capital outlays, such as construction of buildings and land purchases, than the national average. The most important finding is that the amount available for current operations, such as supplies and employee compensation, was less than the national average.

In 1985-86, the amount spent on current operations per pupil in Arizona was $3,105, 9 percent less than the national average of $3,430, ranking the state 32nd. That portion of current operations expended on salaries and wages was 11 percent less than the national norm, ranking Arizona 33rd.

– Tom R. Rex
Research Manager

Coincident Indexes Reverse Course in April

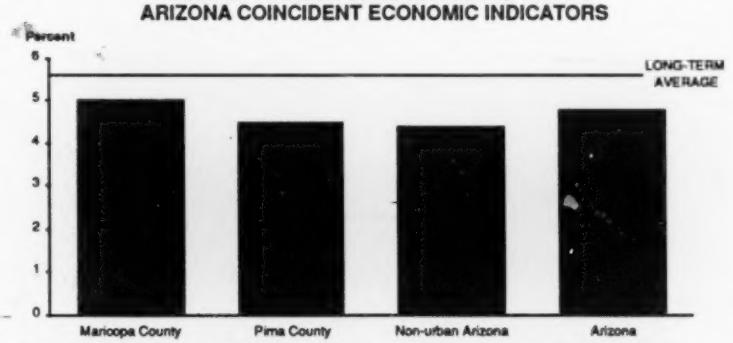
The Arizona economy performed poorly in April following three months of fairly strong growth. Economic gains were nil in Maricopa County; declines occurred in the rest of the state.

The coincident index for the Phoenix area was unchanged at 144.2 (1982=100). The index for the Tucson area fell 0.8 percent to 138.4. In non-metropolitan Arizona, the decline was even greater at 1.1 percent, lowering its index to 131.9.

Retail sales decreased throughout the state, offsetting two stronger months in February and March. In Maricopa County, the inflation-adjusted and seasonally adjusted volume was the lowest since May 1985. The drop was the biggest since April 1984.

Employment also decreased throughout Arizona, though the reduction was not as severe in the Phoenix area as elsewhere. During the three months ending in April, employment barely gained in Maricopa County and declined elsewhere. The unemployment rate remained steady in the metropolitan areas, but climbed in non-urban Arizona in April.

FIGURE I
ANNUAL GROWTH THROUGH APRIL 1988 IN ARIZONA COINCIDENT ECONOMIC INDICATORS



Source: Center for Business Research, College of Business, Arizona State University

The value of commercial building permits rose in Maricopa County for the third straight month, though the level still did not match that of last fall. Elsewhere in the state, the building permit valuation dropped considerably in April. The value in Pima County was the fifth lowest since records began in 1974; in rural Arizona, only two months since 1976 have had a lower value.

Though monthly growth remains variable, the economy throughout Arizona continues to expand, but at subpar rates (see Figure I). With employment losses and rising unemployment reported in preliminary May data, the Arizona economy appears to have experienced another bad month.

The composite statewide measure fell 0.3 percent in April to 140.9.

– Tom R. Rex
Research Manager

Purchasing Indicators Less Positive in June

The Arizona economy continues on its growth curve, but lost some of its buoyancy in June, according to the monthly survey of purchasing managers. While all economic indicators were on the positive side, the increases were smaller than in May. The new order receipt rate has dropped in half between April and June, and the employment increase was the smallest in the past 17 months. Prices moved sharply upward, with the June increase at its highest since last January and the second highest in the past seven years. The price increase rate in each month this year has been higher than in any of the months of 1987, signaling that inflation may again become a serious problem. Further sharp price jumps in the second half of the year may make it more difficult for the economy to sustain its upward trend.

The expansion, now well into its sixth year, is beginning to show signs of age. While vendor backlogs are growing, the pressures appear to be diminishing. Further increases in new orders, production, and employment should continue, although at a more moderate pace, over the second half of the year. However, the production increase rate will continue to slow during the balance of the summer, reacting to the lagging new order receipt rate.

Imbalances in resource supply (labor and materials) are developing which will further slow growth. As the business cycle matures, inflation probably will accelerate and interest rates likely will rise, limiting expansion.

TABLE 1
JUNE PURCHASING SURVEY

	Percent of Purchasing Managers Indicating Each Response (June compared to May)		
Key Indicators	*Higher*	*Same*	*Lower*
Prices paid for major commodities	54	44	2
Delivery time from vendors	29	63	8
Purchased materials inventory level	24	43	33
New orders received	39	33	28
Production	41	39	20
Employment	27	50	23
Purchases	42	30	28

Source: Purchasing Management Association of Arizona, Purchasing Management Association of Southern Arizona, and the Northern Arizona Group.

– Harold Fearon

Dr. Fearon is the National Association of Purchasing Management Professor in the ASU College of Business.

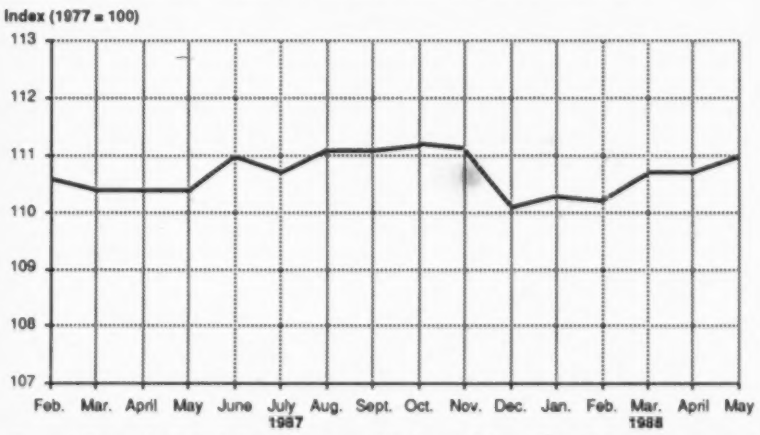
Arizona Leading Index Up in May

The Arizona Index of Leading Economic Indicators increased in May to 111.0 after holding steady at 110.7 in April (see Figure I). The index was above the 110.5 May 1987 figure (1977 = 100), but still below the peak value of 111.2 achieved just before the October stock market crash.

The index is based on 10 economic indicators, combined and weighted to project the pace of economic activity several months ahead. Five of the components come from a monthly survey of Arizona purchasing managers conducted by Dr. Harold Fearon. The Arizona Index of Leading Economic Indicators is sponsored by Citibank (Arizona).

Providing the biggest boost to the index was a jump in seasonally adjusted residential building permits. Money supply, sensitive prices, delivery times, production, employment and average hours worked were also positive influences. Unemployment insurance claims, inventories and new orders had a negative impact.

FIGURE I
ARIZONA INDEX OF LEADING ECONOMIC INDICATORS



Source: Economic Outlook Center, College of Business, Arizona State University; sponsored by Citibank (Arizona).

TABLE 1
NET CONTRIBUTION OF INDIVIDUAL COMPONENTS TO THE ARIZONA INDEX OF LEADING ECONOMIC INDICATORS

	Net Contribution*			
	Feb.	*Mar.*	*Apr.*	*May*
Delivery Time*	.03	–.09	–.03	.08
Inventory Levels*	.06	–.02	–.06	–.08
New Orders*	.02	.01	.04	–.07
Production*	–.08	.06	.00	.04
Employment*	–.09	.01	.00	.04
Residential Building Permits	–.10	.31	–.35	.39
Unemployment Insurance Claims	–.23	.05	.21	–.23
Average Workweek, Manufacturing	.05	.07	–.02	.02
Money Supply	.25	.11	.15	.03
Change in Sensitive Materials Prices	–.07	.00	.03	.04
OVERALL INDEX CHANGE (%)	–.16	.50	–.03	.26

*The net contribution of each component is calculated by multiplying the monthly percent change in its index by its relative importance.

*Based on indicators from the purchasing management associations of Arizona and southern Arizona.

Source: Economic Outlook Center, College of Business, Arizona State University; sponsored by Citibank (Arizona).

COMPONENTS

The largest single source of information for the leading index comes from Dr. Fearon's monthly survey of purchasing managers (see page 10). Historical relationships between the general economy, as measured by Arizona GSP, and the variables from the Fearon survey were reviewed a few years ago in *Arizona Business* (see "The Survey of Arizona Business Conditions as a Leading Economic Indicator," *Arizona Business*, Fourth Quarter, 1984).

In brief, the analysis showed production, new orders and employment all provided a warning lead time of nearly one year preceding recessions. Inventory and delivery time were less sensitive, while price changes gave the least warning – a mere two months, on average.

The variables signal recession when they exhibit successive months of negative values and drops of significant size (specific decision rules are explained in the *Arizona Business* article referenced above). Production and employment have been positive for the past three months. The new order variable was a negative contributor to this month's leading index, but was positive in the previous three month period.

OUTLOOK

An examination of the recent seasonally adjusted performance of the five business conditions variables compiled by Dr. Fearon shows no evidence of the types of movement usually associated with a recession in the months ahead. Instead, these indicators have been moving much like the leading index itself, in a pattern consistent with slow but positive economic growth.

– **Tracy L. Clark,** *Economist*
Economic Outlook Center

ARIZONA ECONOMIC INDICATORS

	Month or Quarter	Value	Percent Change from Previous Period	Percent Change from Year Ago	Year-to-Date Value	Year-to-Date Percent Change from Year Ago
GROSS STATE PRODUCT (In Billions of Dollars, at Annual Rate)						
Arizona - Current Dollars	4th Qtr.	58.055	0.5	6.5	NA	NA
Arizona - 1982 Dollars	4th Qtr.	48.035	–1.2	3.5	NA	NA
COINCIDENT ECONOMIC INDEXES (1982 = 100)						
Arizona	April	140.9	–0.3	4.8	NA	NA
Metropolitan Phoenix	April	144.2	0.0	4.9	NA	NA
Metropolitan Tucson	April	138.4	–0.8	4.5	NA	NA
Non-urban Arizona	April	131.9	–1.1	4.4	NA	NA
CONSUMER PRICE INDEX (1982-84 = 100)						
Metropolitan Phoenix	2nd Qtr.	119.9	2.1	3.8	NA	NA
INDEX OF LEADING ECONOMIC INDICATORS (1977 = 100)						
Arizona	May	111.0	0.3	0.5	NA	NA
BUILDING PERMITS (Total Dollar Value in Thousands)						
Maricopa County	May	376,041	10	4	1,438,796	–13
Pima County	May	40,194	–8	–9	220,932	–16
Balance of State	May	60,013	37	2	255,071	3
Arizona	May	476,248	11	3	1,914,799	–11
TOTAL HOUSING UNITS AUTHORIZED						
Maricopa County	May	2,012	–24	–18	9,492	–23
Pima County	May	325	–30	–17	2,670	–16
Balance of State	May	753	18	19	3,799	–8
Arizona	May	3,090	–17	–18	15,961	–19
HOME SALES						
Maricopa County - Number	May	5,325	20	3	20,175	–17
Maricopa County - Median Price	May	79,050	0	–0.6	79,525	0.9
HOUSING AFFORDABILITY INDEXES						
Metropolitan Phoenix - New Homes	1st Qtr.	91	5.8	–14.2	NA	NA
Metropolitan Phoenix - Resale Homes	1st Qtr.	123	7.9	–5.4	NA	NA
MORTGAGE INTEREST RATES (Conventional, 30-year, Fixed-rate)						
Maricopa County	June	10.4	0.0	0.0	NA	NA
POPULATION ESTIMATES (In Thousands)						
Maricopa County	1st Qtr.	2,006	0.7	2.4	NA	NA
Arizona	1st Qtr.	3,463	0.6	2.2	NA	NA
ELECTRICAL POWER SALES (In Millions of Kilowatt Hours)						
Arizona	May	3,565	14.6	28.0	*	*

NA = Not Applicable

*April value not available

Source: Center for Business Research, College of Business, Arizona State University

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